In the claims:

1. (Currently Amended) A system for radioactive emission imaging after an administration of a radiopharmaceutical, by calculating a position of a radioactivity emitting source in an overall system-of-coordinates, the system comprising:

(a) a first radioactive emission detector;

(b) a first position tracking system, associated with said first radioactive emission detector, and operative in a first system-of-coordinates;

(c) at least a second radioactive emission detector, physically connected to said first radioactive emission detector, by a flexible ~~connector~~connection;

(d) at least a second position tracking system, associated with said at least second radioactive emission detector, and operative in at least a second system-of-coordinates;

(e) a data processor being designed and configured for receiving data inputs from said position tracking systems and from said radioactive emission detectors and for calculating the position of the radioactivity emitting source in the overall system-of-coordinates,

wherein said first and at least second radioactive emission detectors are configured for scanning a three dimensional surface, while following contours of said three dimensional surface,

and wherein said flexible connection constrains said first and second radioactive emission detectors to point towards the vicinity of said radioactivity emitting source.

2. (Original) The system of claim 1, wherein the radioactivity emitting source is selected from the group consisting of a radiopharmaceutically labeled benign tumor, a radiopharmaceutically labeled malignant tumor, a radiopharmaceutically labeled vascular clot, radiopharmaceutically labeled inflammation related components, a radiopharmaceutically labeled abscess and a radiopharmaceutically labeled vascular abnormality.

3. (Previously presented) The system of claim 1, wherein each of said radioactive emission detectors is selected from the group consisting of a narrow beam radioactive emission detector and a spatially sensitive radioactivity detector.

4. (Previously presented) The system of claim 1, wherein each of said position tracking systems is selected from the group consisting of an articulated arm position tracking system, an accelerometers based position tracking system, a potentiometers based position tracking system, a sound wave based position tracking system, a radiofrequency based position tracking system, an electromagnetic field based position tracking system and an optical based position tracking system.

5. (Currently Amended) A method for radioactive emission imaging after an administration of a radiopharmaceutical, by defining a position of a radioactivity emitting source in an overall system-of-coordinates, the method comprising the steps of:

(a) providing: (i) a first radioactive emission detector;

(ii) a first position tracking system, associated with said first radioactive emission detector, and operative in a first system-of-coordinates;

(iii) at least a second radioactive emission detector, physically connected to said first radioactive emission detector, by a flexible ~~connector~~connection;

(iv) at least a second position tracking system, associated with said at least second radioactive emission detector, and operative in at least a second system-of-coordinates;

(v) a data processor, designed and configured for receiving data inputs from said position tracking systems and from said radioactive emission detectors and for calculating the position of the radioactivity emitting source in the overall system-of-coordinates;

(b) employing said radioactive emission detectors, while constraining said radioactive emission detectors to point towards the vicinity of said radioactivity emitting source, in scanning a three dimensional surface, while following contours of said three dimensional surface; and

(c) monitoring radioactivity being emitted from the radioactivity emitting source, while at the same time, monitoring the position of each of said radioactive emission detectors in the overall system-of-coordinates, thereby defining the position of the radioactivity emitting source in the overall system-of-coordinates.

6. (Original) The method for claim 5, wherein the radioactivity emitting source is selected from the group consisting of a radiopharmaceutically labeled benign tumor, a radiopharmaceutically labeled malignant tumor, a radiopharmaceutically labeled vascular clot, radiopharmaceutically labeled inflammation related components, a radiopharmaceutically labeled abscess and a radiopharmaceutically labeled vascular abnormality.

7. (Previously presented) The method for claim 5, wherein each of said radioactive emission detectors is selected from the group consisting of a narrow beam radioactive emission detector and a spatially sensitive radioactivity detector.

8. (Previously presented) The method for claim 5, wherein each of said position tracking systems is selected from the group consisting of an articulated arm position tracking system, an accelerometers based position tracking system, a potentiometers based position tracking system, a sound wave based position tracking system, a radiofrequency based position tracking system, an electromagnetic field based position tracking system and an optical based position tracking system.

9 - 16. (Canceled)

17. (Previously presented) The system of claim 1, and further comprising at least one other three-dimensional imaging modality, different from radioactive emission imaging, the at least one other three-dimensional imaging modality being associated with an at-least-one-other-imaging-modality position tracking system, operative in an at-least-one-other-imaging-modality system-of-coordinates, for calculating the position of a body component in the at-least-one-other-imaging-modality system-of-coordinates,

wherein the data processor is further designed and configured for receiving data inputs from said three-dimensional imaging modality, and said at-least-one-other-imaging-modality position tracking system, and calculating the position of the body component and the position of the radioactivity emitting source in the overall system-of-coordinates.

18 - 22. (Canceled)

23. (Previously presented) The system of claim 17, wherein said at least one other imaging modality communicates with an image presentation device which serves for visual co-presentation of said body component and said radioactivity emitting source.

24 - 25. (Canceled)

26. (Original) The system of claim 17, wherein said imaging modality is selected from the group consisting of a Fluoroscope, a Computed Tomographer, an Magnetic Resonance Imager, an ultrasound imager and an optical camera.

27. (Previously presented) The system of claim1, wherein said radiopharmaceutical is selected from the group consisting of .sup.137I, .sup.67Ga, .sup.99MTc methoxyisobutyl isonitrile, .sup.201TlCl, .sup.18F-fluorodeoxyglucose, .sup.125I-fibrinogen and .sup.111In-octreotide.

28. (Previously presented) The method of claim 5, and further comprising:

providing at least one other three-dimensional imaging modality, different from radioactive emission imaging, the at least one other three-dimensional imaging modality being associated with an at-least-one-other-imaging-modality position tracking system, operative in an at-least-one-other-imaging-modality system-of-coordinates, for calculating the position of the body component in the at-least-one-other-imaging-modality system-of-coordinates;

receiving data inputs from said at least one other three-dimensional imaging modality, and said at-least-one-other-imaging-modality position tracking system; and

calculating the position of the body component and the position of the radioactivity emitting source in the overall system-of-coordinates.

29 - 33. (Canceled)

34. (Previously presented) The method for claim 28, wherein said at least one other imaging modality communicates with an image presentation device which serves for visual co-presentation of said body component and said radioactivity

emitting source.

35 - 36. (Canceled)

37. (Original) The method for claim 28, wherein said imaging modality is selected from the group consisting of a fluoroscope, a computerized tomography scanner, a magnetic resonance imager and an ultrasound imager and an optical camera.

38. (Previously presented) The method for claim 5, wherein said radiopharmaceutical is selected from the group consisting of .sup.137I, .sup.67Ga, .sup.99MTc methoxyisobutyl isonitrile, .sup.201TlCl, .sup.18F-fluorodeoxyglucose, .sup.125I-fibrinogen and .sup.111In-octreotide.

39. (Previously presented) The system of claim 1, and further comprising:

a surgical instrument associated with a surgical-instrument position tracking system, operative in a surgical-instrument system-of-coordinates, for tracking a position of said surgical instrument in a surgical-instrument system-of-coordinates;

wherein said data processor is further designed and configured for receiving data inputs from said surgical-instrument position tracking system and for calculating the position of the surgical instrument and the radioactivity emitting source in the overall system-of-coordinates.

40. (Previously presented) The system of claim 39, wherein said surgical instrument includes an additional radioactive emission detector, whereas said at least one data processor is further designed and configured for receiving data inputs from said additional radioactive emission detector for refining the position of the radioactivity emitting source in the overall system-of-coordinates.

41 - 45. (Canceled)

46. (Previously presented) The system of claim 39, further comprising an image presentation device which serves for visual co-presentation of the position of said surgical instrument and the radioactivity emitting source.

47 - 48. (Canceled)

49. (Currently amended) The system of claim 39, wherein said surgical instrument is selected from the group consisting of laser probe, cardiac catheter, angioplastic catheter, endoscopic probe, biopsy needle, ultrasonic probe, fiber optic scopes, aspiration tubes, laparoscopy probe, thermal probe, ~~and~~ suction/irrigation probe and pointing device. ~~Please add a pointing device for the open surgery application.~~

50 - 61. (Canceled)

62. (Previously presented) The method of claim 5, and further comprising:

providing a surgical instrument, associated with a surgical-instrument position tracking system, operative in a surgical instrument syste-of-cooridinates;

tracking a position of said surgical instrument in the surgical instrument system-of-coordinates, while performing the intrabody surgical procedure;

receiving data inputs from the surgical-instrument position tracking system; and

calculating the position of the surgical instrument and the radioactivity emitting source in an overall system-of-coordinates, while performing the intrabody surgical procedure.

63. (Previously presented) The method of claim 62, wherein said surgical instrument includes an additional radioactive emission detector, whereas said data processor is further designed and configured for receiving data inputs from said additional radioactive emission detector for refining the position of the radioactivity emitting source in the overall system-of-coordinates.

64 - 71. (Canceled)

72. (Previously presented) The method for claim 62, wherein said surgical instrument is selected from the group consisting of laser probe, cardiac catheter, angioplastic catheter, endoscopic probe, biopsy needle, ultrasonic probe, fiber optic scopes, aspiration tubes, laparoscopy probe, thermal probe and suction/irrigation

probe.

73 - 76. (Canceled)

77. (Currently Amended) The method for claim ~~74~~62, further comprising the step of co-presenting the position of said surgical instrument and the radioactivity emitting source via a visual presentation device.

78 - 121. (Canceled)

122. (Previously presented) The system of claim 1, wherein said radiopharmaceutical is selected from the group consisting of 2-[.sup.18F]fluoro-2-deoxy-D-glucose, .sup.111In-Pentetreotide, L-3-[.sup.123I]-Iodo-alpha-methyl-tyrosine, O-(2-[.sup.18 F]fluoroethyl)-L-tyrosine, .sup.111In-Capromab Pendetide and .sup.111In-Satumomab Pendetide.

123 - 132. (Canceled)

133. (Previously presented) The method for claim 5, wherein said radiopharmaceutical is selected from the group consisting of 2-[.sup.18F]fluoro-2-deoxy-D-glucos- e, .sup.111In-Pentetreotide, L-3-[.sup.123I]-Iodo-alpha-methyl-tyrosine, O-(2-[18 F]fluoroethyl)-L-tyrosine, .sup.111In-Capromab Pendetide and .sup.111In-Satumomab Pendetide.

134. (Previously presented) The system of claim 1, wherein said flexible connector is selected from the group consisting of a cable, a hinge, an articulated system of arms and joints, and a combination thereof.

135. (Previously presented) The system of claim 1, wherein said three dimensional surface is defined by body curvatures of a living body that is scanned.

136. (Previously presented) The system of claim 1, wherein said three dimensional surface is defined by extracorporeal body curvatures of a living body that is scanned.

137. (Previously presented) The system of claim 1, wherein said three dimensional surface is defined by a body lumen of a living body that is scanned.

138. (Previously presented) The system of claim 1, wherein said three dimensional surface is defined by body curvatures of a living body that is scanned, during surgery.

139. (Previously presented) The system of claim 1, configured for providing real time information concerning the functionality of a tissue.

140. (Previously presented) The method of claim 5, wherein said flexible connector is selected from the group consisting of a cable, a hinge, an articulated system of arms and joints, and a combination thereof.

141. (Previously presented) The method of claim 5, wherein said three dimensional surface is defined by body curvatures of a living body that is scanned.

142. (Previously presented) The method of claim 5, wherein said three dimensional surface is defined by extracorporeal body curvatures of a living body that is scanned.

143. (Previously presented) The method of claim 5, wherein said three dimensional surface is defined by a body lumen of a living body that is scanned.

144. (Previously presented) The method of claim 5, wherein said three dimensional surface is defined by body curvatures of a living body that is scanned, during surgery.

145. (Previously presented) The method of claim 5, configured for providing real time information concerning the functionality of a tissue.

146. (Previously presented) The system of claim 1, wherein said flexible connector is selected from the group consisting of a cable, a hinge, a system of arms and hinges, and a combination thereof.

147. (Previously presented) The method of claim 5, wherein said flexible connector is selected from the group consisting of a cable, a hinge, a system of arms and hinges, and a combination thereof.